Technical Assistance Supporting USDA-NRCS EQIP Statewide Resource Concern for Water Quality in South Central Texas

Final Report TSSWCB Project 10-03



FUNDING PROVIDED THROUGH A CLEAN WATER ACT §319(h) NONPOINT SOURCE GRANT FROM THE TEXAS STATE SOIL AND WATER CONSERVATION BOARD AND THE U.S. ENVIRONMENTAL PROTECTION AGENCY

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INTRODUCTION

In 2005 the Texas State Soil and Water Conservation Board (TSSWCB) and the Texas Commission on Environmental Quality (TCEQ) worked with the Natural Resources Conservation Service (NRCS) to establish an Environmental Quality Incentives Program (EQIP) State Resource Concern for Water Quality in South Central Texas. Reauthorized in the 2002 federal Farm Bill, EQIP is a voluntary conservation program that supports production agriculture and environmental quality as compatible goals. Through EQIP, farmers and ranchers receive financial assistance with structural and management conservation practices on their land. The program is designed to address both locally identified resources concerns and state priorities.

The EQIP Statewide Resource Concern for Water Quality in South Central Texas is directed toward protection of streams impacted by bacterial contamination from livestock and promotion of good grazing management and alternative water sources in the watersheds of Elm and Sandies Creeks, Peach Creek, Lower San Antonio River and Atascosa River.

The Atascosa River (Segment 2107) rises in extreme northwestern Atascosa County and flows southeastward to its confluence with the Frio River below Choke Canyon Reservoir. The Atascosa River Watershed covers 892,503 acres in portions of Atascosa, Live Oak, Karnes, Wilson, Bexar, Frio, McMullen and Medina Counties.

Elm Creek (1803A) originates in the eastern part of Wilson County and flows eastward to its confluence with Sandies Creek. Sandies Creek (1803B) originates in southwestern Guadalupe County and flows southeastward to its confluence with the Guadalupe River. The Elm and Sandies Creeks Watershed covers 455,283 acres in portions of Gonzales, Karnes, Wilson, DeWitt and Guadalupe Counties.

Peach Creek (1803C) rises in southern Bastrop County and flows south to its confluence with the Guadalupe River. The Peach Creek Watershed covers 309,047 acres in portions of Bastrop, Caldwell, Fayette, and Gonzales Counties.

The Lower San Antonio River (Segment 1901) begins at Mays Crossing near Falls City in Karnes County and flows southeasterly to its confluence with the Guadalupe River near San Antonio Bay. The Lower San Antonio River Watershed covers 812,670 acres in portions of DeWitt, Goliad, Karnes, Refugio, and Victoria Counties.

EQIP financial assistance was made available for best management practices (BMPs) such as cross fencing, water wells, riparian buffers, watering facilities, and prescribed grazing. Applications were ranked for EQIP funding with those livestock operations located in close proximity to impacted streams obtaining a higher rank.

In order to rank higher in the EQIP application process, producer's had to request that a Water Quality Management Plan (WQMP) be prepared for their entire agriculture operation. The TSSWCB WQMP Program affords agricultural producers an opportunity to comply with state water quality laws through traditional voluntary incentive-based programs. A WQMP is

a site-specific plan developed through and approved by SWCDs which includes appropriate land treatment practices, production practices, management measures, and technologies that prevent and abate agricultural and silvicultural nonpoint source pollution. The BMPs prescribed in a WQMP are rooted in the NRCS Field Office Technical Guide. SWCDs provide technical assistance to producers seeking to develop a WQMP.

Program Development

Allocation of the EQIP South Central Texas Water Quality State Resource Concern was designated for the Elm and Sandies Creeks, Peach Creek, Lower San Antonio River and Atascosa River watersheds, collectively. Since funding was not divided among the individual watersheds, more WQMP development existed in one watershed versus another based on ranking results. The Technicians were critically important in promoting the components of this project, including WQMP development and EQIP cost-share availability, and encouraging participation from livestock producers. The Technicians worked with TSSWCB, NRCS and Texas A&M AgriLife to educate ranchers about water quality issues and how WQMPs and BMPs address bacterial contamination from livestock. The Technicians worked with commodity organizations, such as Texas and Southwestern Cattle Raisers Association (TSCRA), Independent Cattlemen's Association of Texas (ICA), and Texas Farm Bureau (TFB), to educate their members on this opportunity to enhance the value of their operation and achieve water quality goals for the watershed at the same time.

The Technicians, with assistance from NRCS and TSSWCB regional offices, assisted landowners in the development of WQMPs and Prescribed Grazing Plans. To obtain a WQMP, landowners and operators submit a request to the local SWCD. The SWCD reviewed the request and assigned a number to each plan. Requests for WQMPs were accepted and ranked on the following basis:

High Priority – Operating units with acreage adjoin the impaired river.

Medium Priority – Operating units not joined to, but within 1,000 feet of the impaired river or located within the watershed.

Low Priority – All other lands that do not fit into the above two categories

Upon approval by the SWCD, the technician worked with the landowner to develop a WQMP. WQMPs are developed according to the NRCS Field Office Technical Guide. An example of activities on which the technician worked includes:

- Development of conservation plan maps showing boundaries, fields, land use, acres and facilities
- Acquisition of soil maps with appropriate interpretations
- Development of an implementation schedule
- Completion of appropriate worksheets used during the planning phases (forage inventories, grazing plans, erosion worksheets, and field notes)

Once the WQMP is developed, it is sent to the appropriate TSSWCB regional office for technical review and certification. Upon certification of the WQMP, the technician worked with the landowner to implement the BMPs prescribed in the WQMP.

The Technicians, with assistance from NRCS, also assisted landowners in applying for and obtaining cost-share funds through the EQIP State Resource Concern for Water Quality in South Central Texas to aid in implementation of BMPs prescribed in WQMPs. The Technicians conducted annual status reviews on all WQMPs developed and certified through the course of the project to ensure that the landowners implemented BMPs specified and agreed to in the WQMP implementation schedule. The Technicians tracked utilization of obligated cost-share funds from the EQIP State Resource Concern for Water Quality in South Central Texas and assisted landowners in utilizing obligated cost-share funds on schedule.

PROJECT ACCOMPLISHMENTS

Through this project 180 WQMPs were developed covering over 60,064 acres in these watersheds. Examples of the many different BMPs that were successfully planned and implemented include: Ponds (378), Fences (382), Riparian Forest Buffers (391), Pasture and Hay Planting (512), Pipelines (516), Prescribed Grazing (528), Nutrient Management (590), Pest Management (595), Brush Management (314) etc. These practices follow the NRCS Field Office Technical Guide standards and specifications.

Public presentations were given at events throughout the watersheds to promote the project and program efforts. Examples of the events are presentations at a Water Quality Management Planning Field Day and at several Extension Service workshops where agricultural producers met to learn about nutrient management, pest management, and prescribed grazing; as well as individual contact with producers.

Project Accomplishments by Task

TASK 1: Project Administration and Coordination

Subtask 1.1 The three lead SWCDs will each hire one District Technician to coordinate and Implement the project goals and objectives.

100% Complete

Subtask 1.2 The Technicians and Bookkeepers will collaborate to perform accounting functions for project funds allocated to their respective SWCD and will submit monthly Reimbursement Forms to TSSWCB.

100% Complete

Subtask 1.3 The Technicians and Bookkeepers will prepare aggregate electronic quarterly progress reports for submission to the TSSWCB. Progress reports shall

document all activities performed within a quarter and shall be submitted by the 15th of January, April, July, October.

100% Complete

Subtask 1.4 The 3 Technicians will each work to establish cooperative agreements between their lead SWCD and the adjacent SWCDs for their respective watershed(s).

100% Complete

Subtask 1.5 The Technicians will meet monthly with lead and cooperating SWCDs and other interested parties to discuss project activities and district activities. The Technicians will maintain regular communication with the TSSWCB Project Manager and with the TSSWCB Field Representatives.

100% Complete

Subtask 1.6 The 3 Technicians will collaborate to host coordination meetings or conference calls, at least quarterly, with project partners to discuss project activities, project schedule, communication needs, deliverables, and other requirements. The 3 Technicians will each develop lists of action items needed following each project coordination meeting and distribute to project personnel.

100% Complete

Subtask 1.7 The Technicians will complete and submit a Final Report to TSSWCB at the culmination of the project. At a minimum the Final Report shall describe the success of the project including WQMPs developed, BMPs implemented, and EQIP monies obligated and utilized. These Final Reports will be provided in electronic and hard copy formats. The TSSWCB will provide a template Final Report.

100% Complete

TASK 2: Promotion of TSSWCB WQMP Program and NRCS EQIP South Central Texas Water Quality State Resource Concern

Subtask 2.1 The 3 Technicians will each compile (Months 1-3) and maintain (Months 4-42) a contact list of landowners (grazing livestock operations) in their respective watershed(s) to periodically distribute notifications announcing the availability of technical and financial assistance for developing and implementing WQMPs.

- **Subtask 2.2** The Technicians will develop and distribute flyers, brochures, letters, news releases and other appropriate promotional publications to encourage participation from livestock producers.
- Letters were mailed out to producers within the SWCDs notifying landowners of technical and financial assistance available to cattlemen for implementation of conservation practices.
- WQMP participant addresses were forwarded to TSSWCB so stakeholder information could be distributed to the producers.
- Flyers, brochures and news releases were developed and distributed throughout the project.

100% Complete

- Subtask 2.3 The Technicians will work with TSSWCB, NRCS, and Texas AgriLife Extension to educate ranchers about water quality issues and how WQMPs and BMPs address bacterial contamination from livestock.
 - Initiated annual Luncheons during which "Soils Week" presentations were shown. Assisted with Annual District Conservation Awards Banquets. Brochures on conservation practices, NRCS, EQIP, and WQMPs were handed out at all events.
 - Attended workgroup and stakeholder meetings and participated in Hydrology, Range Conservation Planning and Water Quality Training. Participated in Range and Herbicide Update Program and Livestock Grazing Management Seminar and assisted with High School Career Day.
 - Attended Texas AgriLife meetings to discuss range management. Assisted the County Agent with a range management tour and worked with the County Agent to set up a range management tour.

- Subtask 2.4 The Technicians will work with commodity organizations, such as Texas and Southwestern Cattle Raisers Association (TSCRA), Independent Cattleman's Association of Texas (ICA), and Texas Farm Bureau (TFB), to educate their members on this opportunity to enhance the value of their operation and achieve water quality goals for the watershed at the same time. (Start Date: Month 1; Completion Date: Month 42)
- Worked with the Extension Service, San Antonio River Authority, Karnes County SWCD, Goliad County SWCD, Wilson County SWCD and Texas Farm Bureau (TFB) members to discuss opportunities to enhance the value of their operations and achieve water quality goals.
- Worked with the Texas AgriLife, TSCRA, and TFB members to discuss opportunities to enhance the value of their operations and achieve water quality goals and to organize the annual AgFair.

- Worked with TSSWCB, NRCS, and Texas AgriLife to educate ranchers about water quality issues and how WQMPs and BMPs address bacterial contamination from livestock.
- The Technicians and NRCS District Conservationists made presentations on soil and water erosion using a Rainfall Simulator.

100% Complete

Subtask 2.5 The Technicians will participate in the stakeholder process for TMDL development and implementation, facilitated by TCEQ, for their respective watersheds in order to efficiently and effectively achieve project goals and to summarize activities and achievements made throughout the course of this project. The Technicians will attend and participate in other public meetings as appropriate in order to communicate project goals, activities and accomplishments to affected parties. Such meetings may include, but are not limited to, county commissioners' courts; local groundwater conservation districts (GCDs), Clean Rivers Program Basin Steering Committee meetings, and other appropriate meetings of critical watershed stakeholder groups.

- Public presentations explaining SWCDs, TSSWCB, and WQMPs were given at stakeholder meetings and events throughout the watersheds.
- Watershed tour with TCEQ representatives and Texas Parks and Wildlife Representatives.
- Visited with producers at a John Deere, Texas AgriLife and NRCS field day demonstrating strip tillage.

100% Complete

TASK 3: Develop and Implementation of WQMPs and Acquisition of EQIP Funding for BMP Implementation

- **Subtask 3.1** The Technicians, with assistance from NRCS and TSSWCB regional offices, will assist landowners in the development of WQMPs and Prescribed Grazing Plans.
- Technical assistance has been provided to 180 producers, on approximately 60,064 acres, in development of WQMPs and Prescribed Grazing Plans.

- **Subtask 3.2** The Technicians, with assistance from NRCS, will assist landowners in applying for and obtaining cost-share funds through the EQIP State Resource Concern for Water Quality in South Central Texas to aid in implementation of BMPs prescribed in WQMPs.
 - The 3 technicians worked with NRCS providing assistance to landowners in applying for cost-share funds through the EQIP State Resource Concern for Water Quality in

South Central Texas. Assistance is being provided to landowners with funded EQIP contracts

100% Complete

- **Subtask 3.3** The Technicians, with assistance from TSSWCB, will assist landowners (grazing livestock operations) in the watersheds in applying for and obtaining cost-share assistance through the TSSWCB WQMP Program in those SWCDs which receive an allocation from TSSWCB (state general revenue; also known as 503 cost-share).
- Technicians, with assistance from NRCS and TSSWCB regional offices, assisted landowners in the implementation and maintenance of BMPs prescribed in WQMPs.

100% Complete

- **Subtask 3.4** The Technicians, with assistance from NRCS and TSSWCB regional offices, will assist landowners in the implementation and maintenance of BMPs prescribed in WOMPs.
- Technicians, with assistance from NRCS and TSSWCB regional offices, assisted landowners in the implementation and maintenance of BMPs prescribed in WQMPs.

100% Complete

TASK 4: Tracking Implementation Success

- **Subtask 4.1** The Technicians will annually conduct status reviews on all WQMPs developed and certified through the course of this project to ensure that the landowners implement BMPs as specified and agreed to in the WQMP implementation schedule.
 - Annual WQMP status reviews were conducted and are complete.

100% Complete

- Subtask 4.2 The Technicians will conduct status reviews on existing WQMPs (grazing livestock operations) (certified prior to this project) in the watershed (20% each year) to ensure that the landowners implement BMPs as specified and agreed to in the WQMP implementation schedule.
- Annual status reviews were conducted and are complete.

Subtask 4.3 The Technicians will track utilization of obligated cost-share funds from EQIP State Resources Concern for Water Quality in South Central Texas. The Technicians, with assistance from NRCS, will assist landowners in utilizing obligated EQIP cost-share funds on schedule.

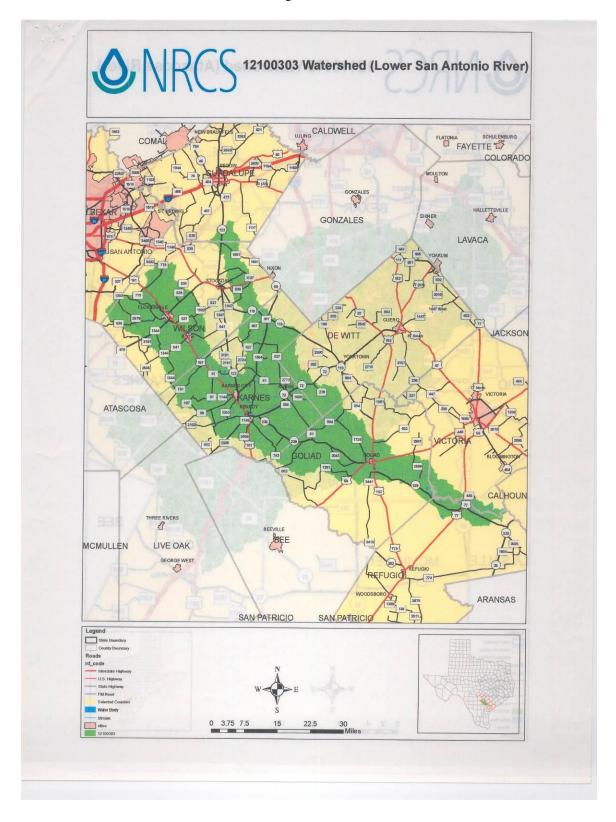
100% Complete

Subtask 4.4 The Technicians will track utilization of obligated financial assistance funds from the TSSWCB WQMP Program (state general revenue; also known as 503 cost-shares) to landowners (grazing livestock operations) in the watersheds in those SWCDs which receive an allocation from TSSWCB.

100% Complete

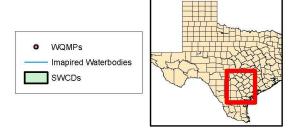
- Subtask 4.5 The Technicians will create a map showing the location of all WQMPs developed and BMPs implemented throughout the project. This map will not reveal the identity or exact location of any producer. (Start Date: Month 1; Completion Date: Month 42)
- Each individual with a WQMP has a map of their property designating the areas of the appropriate practices (fencing, grass planting, prescribed grazing, etc.).

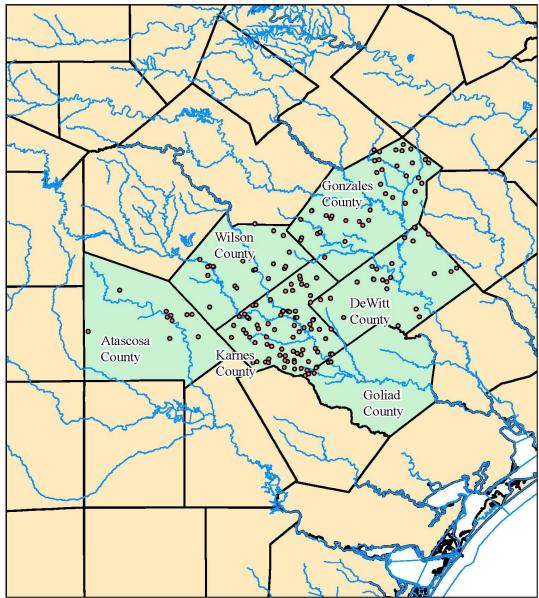
A. Watershed Maps and locations of WQMP's



Map of WQMPs for Project 10-03







B. Correspondence with Agriculture Producers



Karnes County Soil and Water Conservation District
491 N. Sunset Strip, Suite 103- Kenedy, Texas 78119 Phone: (830) 583-3224 ext. 3

March 8, 2011

Mr. / Mrs. Producer:

The Karnes County Soil and Water Conservation District (SWCD) is notifying landowners of technical and financial assistance available to cattlemen within the Lower San Antonio River watershed for implementation of conservation practices. You have been identified as owning property within the Lower San Antonio River watershed and you may be eligible to take advantage of this special program.

Through collaboration with the USDA Natural Resources Conservation Service (NRCS) and the Texas State Soil and Water Conservation Board (TSSWCB), a State Resource Concern for Water Quality in South Central Texas was established as part of the Environmental Quality Incentives Program (EQIP) several years ago. This special allocation of cost-share is only available to livestock producers in a handful of watersheds, including the Lower San Antonio River. The NRCS is currently accepting applications for the Environmental Quality Incentive Program (EQIP).

Lower San Antonio River watershed has been identified by the State as not supporting contact recreation use due to excessive bacteria. While the assessment is on-going and specific sources have not yet been identified, the Karnes County SWCD seeks to proactively work with cattlemen to address potential bacterial runoff from their operations. Through a grant from the TSSWCB, we have hired a Conservation Technician to work with you to implement best management practices to improve water quality in the Lower San Antonio River.

Harvey Kahlden, our Conservation Technician, will work closely with you to develop a Water Quality Management Plan (WQMP) specific to your operation that includes appropriate land treatment practices, production practices, management measures, and technologies to reduce potential bacterial runoff from livestock. After Harvey works with you to develop the WQMP, he will assist you in applying for cost-share assistance from this special allocation of EQIP money. While a WQMP is not required to apply for this special EQIP cost-share, your application will rank higher if you have a WQMP for your cattle operation.

If you are interested obtaining a WQMP for your livestock operation or are interested in applying for this special EQIP cost-share, please contact Harvey at (830) 583-3224 Ext. 3. The Karnes County SWCD looks forward to working with you to improve water quality in the Lower San Antonio River.

Yours in Conservation,

Larry Dement Chairman, Karnes County SWCD



Karnes County Soil and Water Conservation District #343 491 N. Sunset Strip, S-103, Kenedy, TX 78119 – (830) 583-3224 x3

Directors

Zone 1 – Paul T. Brysch Zone 2 – Manuel Davila Zone 3 – Walter Busby Zone 4 – Adrian Opiela Jr.

Zone 5 – Scott Hall

(SWCD Board Meetings monthly on 3rd Thursday 8:30am)

NRCS

Larry Stark – Natural Resource Manager Vacant – Soil Conservationist Planner Terry Miller - Soil Conservationist Trainee

SWCD

Sis Regmund - District Secretary

Harvey Kahlden - District WQ Technician



WQMP's???

Texas has a well-established history of Cooperative Conservation. Agricultural producers, along with SWCDs, TSSWCB, NRCS and EPA, have been working together to protect the natural resources of the Lone Star State for decades. Farmers and ranchers routinely implement best management practices (BMPs) on their lands utilizing the cost-share and technical assistance programs of SWCDs, who receive state and federal funds from TSSWCB, EPA and NRCS. Because of this, the State of Texas has been able to demonstrate major successes in the improvement of water quality conditions through on-the-ground conservation results and progress.

The Texas State Soil Water Conservation Board is the lead agency in Texas for planning, implementing, and managing programs and practices for preventing and abating agricultural and silvicultural nonpoint source pollution. The TSSWCB Water Quality Management Plan (WQMP) Program gives agricultural producers an opportunity to comply with state water quality laws through traditional <u>voluntary</u> incentive-based programs.

A WQMP is a site-specific plan developed through and approved by SWCDs which includes appropriate land treatment practices, production practices, management measures, and technologies that prevent and abate agricultural and silvicultural nonpoint source pollution. The BMPs prescribed in a WQMP are rooted in the NRCS Field Office Technical Guide. SWCDs provide for technical assistance to producers seeking to develop a WQMP. TSSWCB and NRCS have various cost-share programs which provide financial assistance to producers in implementing a WQMP.

Nearly half of the water bodies on the 2004 Texas 303(d) List do not meet water quality standards for bacteria established to protect contact recreation use and/or oyster water use. Many of these water bodies are clustered in south central Texas, including the Lower San Antonio River. They will not bother you or accuse you of contributing to the impairment if you are applying a WQMP through the Karnes Co. SWCD.

Wildlife Habitat

The presence of native, endemic wildlife species on your land is usually a sign of a balanced habitat that is providing for their food, cover, and nesting needs. If you have Bobwhite Quail, Turkey, and White-tailed Deer on your farm, you are doing something right. If you do not or their presence is limited or their condition is weak, you may be destroying their habitat with plants and land use practices that do not provide for their needs. With good planning and application of conservation practices, your farm can productively support domestic livestock as well as healthy wildlife populations. There is a growing income potential in wildlife and it can definitely pay to manage for a healthy wildlife resource on your land. For assistance in assessing your farm or ranch wildlife needs, technical assistance is provided by the USDA Natural Resources Conservation Service Field Office. There can also be cost share assistance possible for applying conservation practices that may be needed to improve your wildlife habitat. Call us for more info!

Water Quality Management field day May 9

Registration deadline May 2

KENEDY — Landowners in the Lower San Antonio River Watershed in Karnes, Wilson, DeWitt, and Goliad counties are invited to attend a field day that highlights how Water Quality Management Plans are helping to implement the Lower San Antonio River Total Maximum Daily Load

Project and the U.S. Department of Agriculture's Natural Resources Conservation Service Gulf of Mexico Initiative by improving water quality in the watershed. The field day will be held Wednesday, May 9, at the VFW Post 9189 in Runge and on a nearby property that is currently covered under a water quality management plan. Registration will begin at 8:30 a.m. The field day should begin at 9 a.m. and conclude around 1 p.m. with

lunch being provided by the San Antonio River Authority.

The specific focus of this field day is to give landowners an op-portunity to see examples of best management practices local pro-ducers have implemented within the Lower San Antonio River wa-teerbed to protect waters quelity.

the Lower San Antonio River wa-tershed to protect water quality. Field day speakers will cover different management practices such as range, pasture, pest, and nutrient management. Water qual-

ity, managing quail habitat, feral hog management, and trapping techniques will also be discussed.

techniques will also be discussed.

In addition to the useful information provided and the opportunity to see conservation on the ground, meeting participants will earn three continuing education

To ensure that lunch is adequate-ly planned, RSVP by Thursday, May 2, to Harvey Kahlden with the Karnes County Soil and Water Conservation District at 830-583-3224, ext. 3, or J.D. Folbre with Texas A&M AgriLife Extension Service at 830-780-3906.

PRCA rodeo May 9-11

The Crockett Lions Club Professional Rodeo Cowboys Association Rodeo will be held Thursday through Saturday, May 9-11, at 7:30 p.m. in the Porth Ag Arena in Crockett.

Watch the best cowboys in the world content against the proof it, but held

compete against the world's best buck-ing stock, owned by the Andrews Rodeo Co.

For more information, contact James Waldrop at 936-544-0999 or email james544@gmail.com.

WANTED: MOUNTED DRILL TEAM RIDERS

'Forget Me Not' Benefit Team Roping

Volunteers honored for conservation services

TEMPLE — The U.S. Department

The second annual Forget Me Not Benefit Team Roping and silent auction is set for Saturday, May 4, in the San Patricio County Rodeo Arena in Sinton.

No. 13 books open at 9 a.m. with roping to begin after the draw is complete. Ropers may enter one, draw three; or enter open, draw four for \$120 per roper.

\$\text{S500}\$ will be awarded to the high point roper in the No. 13 event.

Books will open for the No. 13 roping; books will open for the No. 13 during the No. 13 roping; Ropers may enter one, draw three for \$100 per roper.

A trailer will be awarded to the high point roper of the No. 24 during the No. 10 roping. Ropers may enter one, draw three for \$100 per roper.

A trailer will be awarded to the high-point girl in the No. 8 and 10. A belt buckle will be awarded to the high-point roper of the No. 8 and 10. A belt buckle will be

for the help, but we also recognize much more conservation work needs to be done."

needs to be done."

Earth Team is a program that partners volunteers with Natural Resources Conservation Service employees. It was created in 1985 and offers many opportunities to individuals older than 14 who are interested in volunteering to improve the nation's natural resources. Earth Team volunteers help conservationists provide private landowners and others a range of services from conservation technical assistance to teaching and generating awareness about conservation through the use of community projects.

tion through the use of community-projects.

Salinas said he hopes National Volunteer Week will motivate oth-ers to volunteer to help the Natural Resources Conservation Service with its conservation mission.

Send us your farm news

The Wilson County News accepts agriculture news releases, as well as photos, every week for publication. Fax them to 830-393-3219, mail/deliver to 1012 C St., Floresville, TX 78114, or email reader@wcn-online.com.

Wilson County's #1 Ag Source Agriculture Today.



RED McCOM

C. Photos – Best Management Practices



A Field Border is a strip of permanent vegetation establishment at the edge or around the perimeter of a field for soil and water quality protection.



A grassed waterway is a shaped or graded channel that is established with suitable vegetation to carry surface water at a non-erosive velocity to a stable outlet. Grassed waterways are used to convey runoff from terraces, diversions or other water concentrations without causing erosion. Ultimately, grassed waterways protect and/or improve water quality.

Grassed waterways are designed to convey a minimum peak runoff capacity. The width, side slopes and depth is determined by the watershed leading into the waterway. The vegetation planted should be selected according to current site conditions, intended use and ability to achieve adequate density, height and vigor appropriate to stabilize the waterway. Perennial vegetation should be used for erosion protection.



Filter strips improve water quality by removing contaminants from overland water flow. The purpose of a filter strip is to trap sediment, plant nutrients, organic matter and chemicals as runoff passes through vegetation. As runoff moves through the filter strip, sediment and other suspended materials may be filtered from the runoff through deposition.

Plants selected for filter strips should have stiff stems and a high stem density near the ground surface. These species need to exhibit dense and vigorous growth habits which enable site stabilization and provide soil protection. Over time, filter strips will trap sediment deposition. Proper filter strip vegetation needs to be able to withstand partial burial from sediment deposition as well as be tolerant of herbicides used on the area that contributes to the runoff.



A riparian forest buffer is land next to streams, lakes and wetlands that is managed for perennial vegetation to enhance and protect aquatic resources from adverse impacts of agricultural practices. These areas are natural or re-established streamside forests made up of tree, shrub, and herbaceous plantings. They buffer nonpoint source pollution of waterways from adjacent land, reduce bank erosion, protect aquatic environments, enhance wildlife habitat and increase biodiversity.



Prescribed grazing of Coastal Bermuda grass. This field was treated with both nutrient and pest management to improve forage quality and quantity.



Forage was harvested at a frequency and height in which it maintained a desired healthy plant community through its life expectancy.



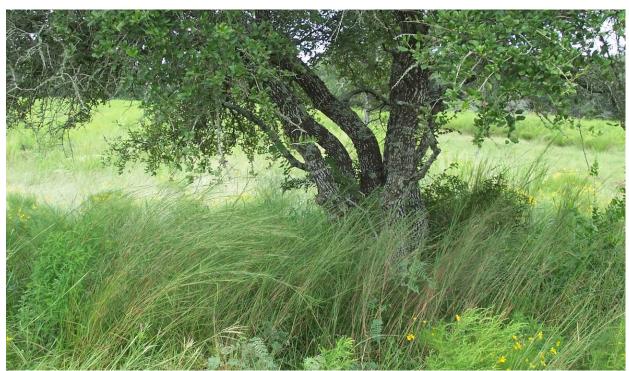
These livestock ponds were designed and installed with the intent to improve the distribution of grazing lands.



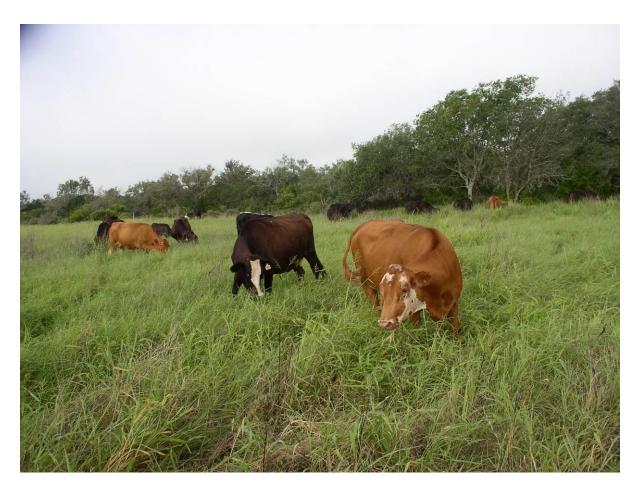
Testing a solar powered well pump



This Water Storage and Drinking Facility was designed and installed with the intent to improve the distribution of grazing lands.



Rangeland following a full growing season deferment resulted in excellent recovery of native grasses.



Prescribed grazing will reduce soil erosion, maintain or improve soil condition, maintain or improve health and vigor of the plant community; as well as improve or maintain water quality and quantity.



High Intensive Grazing Systems requires long deferment periods following short grazing periods.